

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Mikhail Laksin et al.

Application No.: 10/586,098

Confirmation No.: 1736

Filed: January 14, 2005

Art Unit: 2853

For: HYBRID ENERGY CURABLE SOLVENT
BASED LIQUID PRINTING INKS

Examiner: M. S. Shah

AMENDMENT

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

In light of a personal interview, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 7 of this paper.

FEE CALCULATION

Any additional fee required has been calculated as follows:

	No. Claims After Amendment		Highest No. Previously Paid For		Extra Present		Rate	Additional Fee
Total	20	MINUS	20**	=	0	X		\$
Indep.	2	MINUS	3**	=	0	X		\$
First presentation of multiple dependent claim(s)						X		\$
TOTAL								\$

* not less than 20

** not less than 3

In the event the actual fee is greater than the payment submitted or is inadvertently not enclosed or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 50-2215.

CONTINGENT EXTENSION REQUEST

If this communication is filed after the shortened statutory time period had elapsed and no separate Petition is enclosed, the Commissioner of Patents and Trademarks is petitioned, under 37 CFR 1.136(a), to extend the time for filing a response to the outstanding Office Action by the number of months which will avoid abandonment under 37 CFR 1.135. The fee under 37 CFR 1.17 should be charged to our Deposit Account No. 50-2215.

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A printing ink comprising:
 - (i) a solvent-soluble resin;
 - (ii) an energy curable monomer, oligomer, or mixture thereof; ~~and~~
 - (iii) a vehicle; and
 - (iv) pigment.
2. (Previously presented) The printing ink of claim 1, wherein the energy curable monomer, oligomer, or mixture thereof, is an ethylenically unsaturated monomer, oligomer, or mixture thereof.
3. (Previously presented) The printing ink of claim 1, wherein the energy curable monomer, oligomer, or mixture thereof, is in an amount of about 1% to 50% by weight of the printing ink.
4. (Previously presented) The printing ink of claim 1, wherein the solvent-soluble resin is in a range between about 0.1% to about 40% by weight of the printing ink.
5. (Previously presented) The printing ink of claim 4, wherein the solvent-soluble resin comprises nitrocellulose, acrylate, methacrylate, polyester, polyamide, copolymer of styrene and maleic anhydride, polyurethane and epoxy.
6. (Previously presented) The printing ink of claim 1, wherein the vehicle comprises water, methanol, ethanol, n-propanol, iso-propanol, n-butanol, sec-butanol, tert-butanol, iso-butanol, n-pentanol, or ethyl acetate.

7. (Previously presented) The printing ink of claim 1 further comprising a photoinitiator.

8. (Previously presented) The printing ink of claim 7, wherein the photoinitiator is in an amount between about 0.1% and about 20% by weight of the printing ink.

9. (Previously presented) The printing ink of claim 7, wherein the photoinitiator is selected from the group consisting of benzophenone, acetophenone, fluorenone, xanthone, thioxanthone, carbazole, benzoin, the allyl benzoin ethers, 2- or 3- or 4-bromoacetophenone, 3- or 4- allylacetophenone, m- or p-diacetylbenzene, 2- or 3- or 4-methoxybenzophenone, 3,3'- or 3,4'- or 4,4'-dimethoxybenzophenone, 4-chloro-4'-benzylbenzophenone, 2- or 3-chloroxanthone, 3,9-dichloroxanthone, 2- or 3-chlorothioxanthone, 3-chloro-8-nonylxanthone, 3-methoxyanthone, 3-iodixanthone, 2-acetyl-4-methylphenyl acetate, alkyl and aryl ethers of benzoin, phenylglyoxal alkyl acetals, 2,2'-dimethoxy-2-phenyl-acetophenone, 2,2-diethoxyacetophenone, 2,2-diisopropoxyacetophenone, 1,3-diphenyl acetone, naphthalene sulfonyl chloride, and mixtures thereof.

10. (Previously presented) A method of printing comprising:

- (i) printing a substrate with the printing ink of claim 1;
- (ii) drying the printed ink; and
- (iii) exposing the printed ink to an actinic radiation.

11. (Previously presented) The method of claim 10, wherein steps (ii) and (iii) are performed sequentially.

12. (Previously presented) The method of claim 10, wherein steps (ii) and (iii) are performed simultaneously.

13. (Previously presented) The method of claim 10, wherein the actinic radiation is an electron beam.

14. (Previously presented) The method of claim 10, wherein the printing ink further comprising a photoinitiator.

15. (Previously presented) The method of claim 14, wherein the actinic radiation is a ultraviolet light.

16. (Previously presented) The method of claim 14, wherein the photoinitiator is selected from the group consisting of benzophenone, acetophenone, fluorenone, xanthone, thioxanthone, carbazole, benzoin, the allyl benzoin ethers, 2- or 3- or 4-bromoacetophenone, 3- or 4- allylacetophenone, m- or p-diacetylbenzene, 2- or 3- or 4-methoxybenzophenone, 3,3'- or 3,4'- or 4,4'-dimethoxybenzophenone, 4-chloro-4'-benzylbenzophenone, 2- or 3-chloroxanthone, 3,9-dichloroxanthone, 2- or 3-chlorothioxanthone, 3-chloro-8-nonylxanthone, 3-methoxyanthone, 3-iodixanthone, 2-acetyl-4-methylphenyl acetate, alkyl and aryl ethers of benzoin, phenylglyoxal alkyl acetals, 2,2'-dimethoxy-2-phenyl-acetophenone, 2,2-diethoxyacetophenone, 2,2-diisopropoxyacetophenone, 1,3-diphenyl acetone, naphthalene sulfonyl chloride, and mixtures thereof.

17. (Previously presented) The method of claim 10, wherein the energy curable monomer, oligomer, or mixture thereof, is an ethylenically unsaturated monomer, oligomer, or mixture thereof.

18. (Previously presented) The method of claim 10, wherein the energy curable monomer, oligomer, or mixture thereof, is in an amount of about 1 to 50% by weight of the printing ink.

19. (Previously presented) The method of claim 10, wherein the solvent-soluble resin is in an amount of about 0.1% and about 40% by weight of the total ink.

20. (Previously presented) The method of claim 10, wherein the vehicle comprises water, methanol, ethanol, n-propanol, iso-propanol, n-butanol, sec-butanol, tert-butanol, iso-butanol, n-pentanol, or ethyl acetate.

REMARKS

The courteous interview extended to Applicants' representatives by Examiner Shaw on February 24, 2010, is acknowledged with appreciation. To the extent necessary, it is confirmed that Messrs. David Lazar and Sidney Persley were authorized by the undersigned, an attorney of record, to conduct the interview. Mr. Persley is authorized by the assignee to sign powers of attorney and has now done so (attached).

During the interview, the arguments presented in the RCE Submission were reviewed and it was additionally pointed out that the references discussed during the interview did not teach or suggest a pigment-based ink. The claims have been amended above to call for the presence of a pigment as disclosed, for instance, in the paragraph at the bottom of page 3 of the application.

In addition, the primary reference does not disclose including a solvent soluble resin but rather deals primarily with a foaming problem in an ink composition, and it is apparent that adding a solvent soluble resin to the ink would create additional foam, thereby aggravating the problem.

Even if the primary reference had not been concerned with the foaming problem, there is no reason that a solvent soluble resin would be included in an ink containing an energy-curable monomer, vehicle and pigment.

In view of the above amendment and remarks, applicant believes the pending application is in condition for allowance.

Dated: March 15, 2010

Respectfully submitted,

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